

**From:** Fajardo, Julius - OCE, Washington, DC [julius.fajardo@usda.gov]  
**Sent:** 3/2/2021 11:07:29 AM  
**To:** Jennings, Susan [Jennings.Susan@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Lutfy, Caitlyn (CDC/DDID/NCEZID/DFWED) [vxa3@cdc.gov]; Willis, Kristen [Willis.Kristen@epa.gov]  
**Subject:** RE: EPA public resources on agriculture practices

Hello everyone,

Hope all is well and thanks for reaching out. USDA asserts that for a “positive behavior change takeaway” from the paper, a focus on the best management practices or good agricultural practices would help mitigate AMR rather than hastily resorting to pesticide alternatives and reducing pesticide/triazole use. There are certain benefits provided by triazoles and are not easily/simplely replaced but rather complemented with other safe and effective available disease management tools to our growers.

- In a joint FAO/WHO expert meeting in collaboration with OIE on foodborne antimicrobial resistance, a publication on the Role of the Environment, Crops and Biocides (<http://www.fao.org/3/ca6724en/ca6724en.pdf>), emphasized that the application of antimicrobials should only be used in crop production according to label guidelines and restrictions in the context of integrated pest management (IPM) strategies. The systems approach of IPM is the most effective strategy to responsibly use antimicrobials in plant production to minimize economic losses for crops, as well as to minimize risks to human health and overall environment. In addition, other key components of IPM that plant health professionals and growers for preventing and managing plant diseases can adopt include: 1) accurate and timely diagnosis and monitoring, which can also include disease modelling and predictive systems to optimize timing of plant protection product applications; 2) use of disease-resistant crop varieties, including resistant rootstocks in both fruit and vegetable crops; 3) exclusionary practices (biosecurity) that prevent the introduction of new and exotic pathogens into a crop, such as using pathogen-free true seed and vegetative planting material, clean irrigation water and sanitation practices that prevent the movement of pathogens from plant to plant and field to field; 4) careful site selection and soil improvement to maximize plant health and minimize environmental factors that favor disease development; 5) crop rotation and other cultural practices to prevent pathogen build-up; 6) use of biological and biorational products; and 7) judicious use of antimicrobials, including those for the treatment and control of bacterial and fungal diseases.
- The International Code of Conduct on Pesticide Management is a framework endorsed by the FAO member countries, and supported by key pesticide industry associations and civil society organizations that promotes the implementation of IPM as a pest and disease management strategy, which has successfully reduced pesticide use and improved yields, food quality and incomes of farmers ([http://www.fao.org/fileadmin/templates/agphome/documents/Pests\\_Pesticides/Code/CODE\\_2014Sep\\_ENG.pdf](http://www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/CODE_2014Sep_ENG.pdf)). Further, the role of IPM in pesticide risk reduction is reflected in FAO's Code of Conduct on the Distribution and Use of Pesticides as indicated in the websource: <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/ipm/ipm-risk/en/>.
- Other good agricultural practices available to significantly reduce pesticide drift, EPA developed the Drift Reduction Technology (DRT) Program to encourage the manufacture, marketing, and application of spray technologies based on science (<https://www.epa.gov/reducing-pesticide-drift/about-drift-reduction-technology-program>). Stewardship programs are available to protect human health and the environment such as the Pesticide Safety Education Program or PSEP ( <https://www.epa.gov/pesticide-worker-safety/pesticide-safety-education-programs-0>), Worker Protection Standard (WPS) training for farm workers and employers

(<https://www.epa.gov/pesticide-worker-safety/agricultural-worker-protection-standard-wps>), re-certification training for licensed pesticide applicators, and other study program for those preparing to become a licensed pesticide applicator.

- Shifting to alternatives, the Fungicide Resistance Action Committee (FRAC) has a list of conventional fungicides (other than triazoles) used to manage fungicide resistance and broaden spectrum of disease control. List also includes alternatives such as the incorporation of host plant defense inducers (FRAC Code P01-P07) and biologicals with multiple modes of action (FRAC Code BM01-BM02) other than conventional pesticides ([https://www.frac.info/docs/default-source/publications/frac-code-list/frac-code-list-2020-finalb16c2b2c512362eb9a1eff00004acf5d.pdf?sfvrsn=54f499a\\_2](https://www.frac.info/docs/default-source/publications/frac-code-list/frac-code-list-2020-finalb16c2b2c512362eb9a1eff00004acf5d.pdf?sfvrsn=54f499a_2)).
- EPA has a database of reduced risk fungicides with favorable toxicological profile where growers/manufacturers have the option to tank mix, apply alternately and improve formulation (<https://www.epa.gov/pesticide-registration/conventional-reduced-risk-pesticide-program>). In addition to biopesticides as mentioned earlier, USDA has an organic national list of substances at <https://www.ams.usda.gov/rules-regulations/organic/national-list> including minimum risk pesticides exempted from FIFRA registration: <https://www.epa.gov/minimum-risk-pesticides> where these alternatives can be complemented with conventional pesticides. However, critical factors to consider in applying these alternatives include field efficacy to manage the target disease(s), physical and chemical compatibility when mixing these, and crop safety where no phytotoxicity shows up not only on the crop but nearby plants as well.

Please do not hesitate to reach out if you have additional queries or information to supplement the paper.

Thanks and stay safe always,  
Julius

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**From:** Jennings, Susan <[Jennings.Susan@epa.gov](mailto:Jennings.Susan@epa.gov)>  
**Sent:** Monday, March 1, 2021 1:39 PM  
**To:** Mattas-Curry, Lahne <[Mattas-Curry.Lahne@epa.gov](mailto:Mattas-Curry.Lahne@epa.gov)>; Lutfy, Caitlyn (CDC/DDID/NCEZID/DFWED) <[vxa3@cdc.gov](mailto:vxa3@cdc.gov)>; Willis, Kristen <[Willis.Kristen@epa.gov](mailto:Willis.Kristen@epa.gov)>  
**Cc:** Fajardo, Julius - OCE, Washington, DC <[julius.fajardo@usda.gov](mailto:julius.fajardo@usda.gov)>  
**Subject:** RE: EPA public resources on agriculture practices

That blog is very old and I've sent it to our web team to see if they can correct the links.

That said, the blog is primarily focusing on IPM and biopesticides. While there is some IPM that can be conducted for antibiotic pesticides, there is still a great deal of research needed to find some truly workable, effective alternative practices.

Also, antibiotic pesticides are not biopesticides (at least oxytetracycline, streptomycin and kasugamycin) but are regulated by our Registration Division. The linked information would not have the information you are seeking. Here is a link for biopesticides that may provide you some info: <https://www.epa.gov/pesticides/biopesticides>.

Susan.

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**From:** Mattas-Curry, Lahne <[Mattas-Curry.Lahne@epa.gov](mailto:Mattas-Curry.Lahne@epa.gov)>  
**Sent:** Monday, March 1, 2021 1:23 PM  
**To:** Lutfy, Caitlyn (CDC/DDID/NCEZID/DFWED) <[vxa3@cdc.gov](mailto:vxa3@cdc.gov)>; Jennings, Susan <[Jennings.Susan@epa.gov](mailto:Jennings.Susan@epa.gov)>; Willis, Kristen <[Willis.Kristen@epa.gov](mailto:Willis.Kristen@epa.gov)>

**Cc:** Fajardo, Julius - OCE, Washington, DC <[julius.fajardo@usda.gov](mailto:julius.fajardo@usda.gov)>

**Subject:** RE: EPA public resources on agriculture practices

Thanks Susan, thanks Cait.

When I did a quick google search, I did come up with this blog

<https://blog.epa.gov/2015/02/02/farmers-shift-towards-virtually-non-toxic-alternatives-for-pest-control/>

but the links are broken – do you know if the pages that it was linking to actually exist anymore? Seems like they might be something simple that Cait could link to as alternatives?

Anyway, glad we have all connected and will be working together more on this topic!

Lahne

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**From:** Lutfy, Caitlyn (CDC/DDID/NCEZID/DFWED) <[vxa3@cdc.gov](mailto:vxa3@cdc.gov)>

**Sent:** Monday, March 1, 2021 12:01 PM

**To:** Jennings, Susan <[Jennings.Susan@epa.gov](mailto:Jennings.Susan@epa.gov)>; Willis, Kristen <[Willis.Kristen@epa.gov](mailto:Willis.Kristen@epa.gov)>; Mattas-Curry, Lahne <[Mattas-Curry.Lahne@epa.gov](mailto:Mattas-Curry.Lahne@epa.gov)>

**Cc:** Fajardo, Julius - OCE, Washington, DC <[julius.fajardo@usda.gov](mailto:julius.fajardo@usda.gov)>

**Subject:** RE: EPA public resources on agriculture practices

Thank you all. I am connected with Dawn and Michael. I just wanted to see if there was anything already out there on alternatives to pesticide use separate from the larger issue on antimicrobial resistance and triazole specifics. It looks like there is not at this time. I know you are working on more.

Thanks for looking into it.

Thanks,  
Cait

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**From:** Jennings, Susan <[Jennings.Susan@epa.gov](mailto:Jennings.Susan@epa.gov)>

**Sent:** Monday, March 1, 2021 11:53 AM

**To:** Willis, Kristen <[Willis.Kristen@epa.gov](mailto:Willis.Kristen@epa.gov)>; Mattas-Curry, Lahne <[Mattas-Curry.Lahne@epa.gov](mailto:Mattas-Curry.Lahne@epa.gov)>

**Cc:** Lutfy, Caitlyn (CDC/DDID/NCEZID/DFWED) <[vxa3@cdc.gov](mailto:vxa3@cdc.gov)>; Fajardo, Julius - OCE, Washington, DC <[julius.fajardo@usda.gov](mailto:julius.fajardo@usda.gov)>

**Subject:** RE: EPA public resources on agriculture practices

Sure. This issue is gaining a lot of traction and we've been working on it with the PACCARB, along with Dawn Sievert and Michael Craig.

There is a definite need for this type of information, but we do not yet have any resources or information posted online for it. You might try Julius Fajardo at USDA, cc'd above, but I'm not sure that much of the work is posted online yet. This is most assuredly a work in progress.

Please let me know if you have any other questions.

Susan.

Susan Jennings  
Senior Advisor for Public Health  
EPA, Office of Pesticide Programs  
(706) 355-8574  
(703) 216-8627

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**From:** Willis, Kristen <[Willis.Kristen@epa.gov](mailto:Willis.Kristen@epa.gov)>  
**Sent:** Monday, March 1, 2021 8:28 AM  
**To:** Mattas-Curry, Lahne <[Mattas-Curry.Lahne@epa.gov](mailto:Mattas-Curry.Lahne@epa.gov)>  
**Cc:** Jennings, Susan <[Jennings.Susan@epa.gov](mailto:Jennings.Susan@epa.gov)>  
**Subject:** RE: EPA public resources on agriculture practices

Hi Lahne!

I am cc'ing our OPP CDC liaison, Susan Jennings. I know Susan has been active on the antimicrobial task force.

Susan: Can you help Lahne with this question?

Thanks,  
Kristen

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**From:** Mattas-Curry, Lahne <[Mattas-Curry.Lahne@epa.gov](mailto:Mattas-Curry.Lahne@epa.gov)>  
**Sent:** Monday, March 01, 2021 8:11 AM  
**To:** Willis, Kristen <[Willis.Kristen@epa.gov](mailto:Willis.Kristen@epa.gov)>  
**Subject:** FW: EPA public resources on agriculture practices

Non-covid request

Hey Kristen, I am working with CDC on antimicrobial resistance research etc and one of the comms folks had a question about whether or not we have any recommendations or information on what farmers could use instead of triazole and if there's a page on our website (see request below) – a quick google search brought me to an old blog post about farmers using alternate pesticides/fungicides, but the link to the EPA page where the info seemed to be was broken. Do you happen to know or can you point me to someone who might?

Thanks!  
Lahne

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**From:** Lutfy, Caitlyn (CDC/DDID/NCEZID/DFWED) <[vxa3@cdc.gov](mailto:vxa3@cdc.gov)>  
**Sent:** Friday, February 26, 2021 5:09 PM  
**To:** Mattas-Curry, Lahne <[Mattas-Curry.Lahne@epa.gov](mailto:Mattas-Curry.Lahne@epa.gov)>  
**Subject:** EPA public resources on agriculture practices

Hi Lahne,

It was great to meet you last week. I mentioned that we have a paper coming out about triazole-resistant *Aspergillus* and the increase in triazole fungicide use in U.S. agriculture. I am working on talking points and messaging and we always want to conclude with some positive behavior change take away. I have messaging for awareness, triazole stewardship for clinicians. We'd also like to point to alternatives for farmers to reduce triazole fungicide use. As CDC does not have expertise in agriculture and we want to stay in our area and refer to federal resources, I was wondering if you know of and could point me to any EPA webpages or existing public resources on alternative practices to reduce synthetic pesticide/fungicide use, if there are any.

Don't spend too much time on this.

Appreciatively,  
Cait

Caitlyn Lutfy, MPH  
Health Communication Specialist  
Antimicrobial Resistance Office

Division of Foodborne, Waterborne and Environmental Diseases  
Centers for Disease Control and Prevention  
470-240-6303

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